PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING

To:
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PCT

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	21 JULY 2004 (21.07.2004)
Applicant's or agent's file reference FP030101/PCT	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/months/year)*
PCT/KR2003/000656	**02 APRIL 2003 (02.04.2003)**	02 APRIL 2002 (02.04.2002)

Applicant

CHOI, Youn Sang

1. The applicant is hereby notified that International Preliminary Examining Authority transmits here with the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report(but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details in the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer COMMISSIONER Telephone No. 82-42-481-5281

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference FP030101/PCT	**FOR FURTHER ACTION**	SeeNotificationofTransmittalofInternationalPreliminary Examination Report (Form PCT/IPEA/416)
International application No. **PCT/KR2003/000656**	International filing date *(day/month/year)* **02 APRIL 2003 (02.04.2003)**	Priority date *(day/month/year)* 02 APRIL 2002 (02.04.2002)

International Patent Classification (IPC) or national classification and IPC

IPC7 B60F 3/00, B60V 1/00, B60V 3/00

Applicant

CHOI, Youn Sang

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   [X] This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 9 sheets.

3. This report contains indications relating to the following items:

   - I [X] Basis of the report
   - II [ ] Priority
   - III [ ] Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV [ ] Lack of unity of invention
   - V [X] Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI [ ] Certain documents cited
   - VII [ ] Certain defects in the international application
   - VIII [ ] Certain observations on the international application

Date of submission of the demamd	Date of completion of this report
17 OCTOBER 2003 (17.10.2003)	19 JULY 2004 (19.07.2004)

Name and mailing address of the IPEA/KR

Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International aplication No.
PCT/KR2003/000656

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:
pages 1-21 , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

☒ the claims:
pages _____ , as originally filed
pages _____ , as amended (together with any statment) under Article 19
pages 24-32 , filed with the demand
pages _____ , filed with the letter of _____

☒ the drawings:
pages 1-18 , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

☐ the sequence listing part of the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☒ the language of publication of the international application(under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/ or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained inthe international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

☒ the description, pages None

☒ the claims, Nos. 14-29

☒ the drawings, fig None

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION

International aplication No.
PCT/KR2003/000656

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-13	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-13	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims	None	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following document:

D1: US-A-3661114
D2: DE-A-10010883
D3: US-A-4459932
D4: WO-90-13473

The present invention relates to an amphibious vehicle having armoured inflatable floating devices (AFIFDs) for providing additional buoyancy during swimming, which are mounted on both outer sides of the vehicle. The amphibious vehicle is connected with the AFIFDs by at least one wall closet-type connecting room.

The amphibious vehicle of the present invention is characterized in that a driving means for carrying out folding and unfolding actions of the AFIFD is installed in the wall closet-type connection room, and that the closet-type connecting room is sunken inwardly from the outer side surface of the vehicle is closed at upper and lower sides, left and right sides and inner side thereof and opened at the outer side thereof.

Said technical features lead the present invention to have effects that the AFIFD does not cause hindrance to the running of a vehicle during land travel, and that the AFIFD which provides additional buoyance can be rapidly unfolded during water travel.

D1 relates to an amphibious vehicle having an elongated buoyant main body with ground wheels at the ends for ground travel and a propulsion means for water travel.

D2 relates to an amphibious vehicle having a propulsion means for water travel and an elongated buoyant body which can be elongated forward and backward.

(Continued on Supplemental Sheet.)

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

Box V.

D3 relates to an amphibious vehicle having inflatable members which is secured to the chassis along its longitudinal edges and at the front and the rear of the chassis, and a further inflatable element beneath the chassis which serves as a float for the vehicle.

D4 relates to an emergency flotation device for watercraft having an inflatable member which is folded, the inflatable member being inflated in an emergency to provide the buoyant support.

As seen in D1-D4, the existing amphibious vehicles have a buoyant body only for water travel is protruded outside of the amphibious vehicle, which causes hindrance to the running during land travel, and which limits the design of the outside shape of the vehicle.

1) Novelty and Inventive step

Claims 1-13 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the wall closet-type connecting room being sunken inwardly from the outer side surface of the amphibious vehicle and having a driving means for carrying out folding and unfolding actions of an amphibious vehicle having armoured inflatable floating devices (AFIFDs).

2) Industrial Applicability

Claims 1-13 fulfill the requirement of PCT Article 33(4).

What Is Claimed Is:

1.(amended) An amphibious vehicle having armoured inflatable floating devices (AFIFDs) for providing additional buoyancy during swimming, which are mounted on both outer sides thereof, the amphibious vehicle comprising:

at least one wall closet-type connecting room corresponding to at least one connector protruding from a side of the AFIFD that contacts the amphibious vehicle in order to have the amphibious vehicle connected with the AFIFD each other, the wall closet-type connecting room and the connector of the AFIFD forming a sealed space by being connected correspondingly to the connectors of the AFIFD, the wall closet-type connecting room being sunken inwardly from the outer side surface of the amphibious vehicle and being a corresponding area of the amphibious vehicle for installing a driving means for carrying out folding and unfolding actions of the AFIFD, so that the wall closet-type connecting room is closed at the upper and lower sides, the right and left sides and the inner side thereof and opened at the outer side thereof.

2. The amphibious vehicle according to claim 1, wherein the inner side of the wall closet-type connecting room is made of sectional plates having sealing means.

3.(amended) An AFIFD mounted on an amphibious vehicle for providing additional buoyancy to the amphibious vehicle, the AFIFD comprising:

an inner plate attached to the outer side of the amphibious vehicle through at least one hinge and fixing means, the inner plate forming a first side surface of the AFIFD;

an upper armor plate connected to the upper end of the inner plate by hinges to form the top surface of the AFIFD;

an outer armor plate connected to the upper armor plate by hinges to form a second side surface of the AFIFD;

a lower armor plate connected to the lower end of the inner plate and the outer armor plate by hinges to form the bottom surface of the AFIFD;

a seal membrane for sealing gaps between two plates of the inner plate, the upper armor plate, the outer armor plate and the lower armor plate, the two plates being in contact with each other;

front and rear thimble-type rubber membranes respectively located on the front and rear parts of the AFIFD, wherein the outer circumferences surrounding the ends of the thimble-type rubber membranes are bonded to corresponding parts of the inner plate, the upper armor plate, the outer armor plate and the lower armor plate;

at least one connector mounted on the inner plate to provide air to the AFIFD;

front and rear armor plates respectively connected to both ends of the inner plate by hinges for protecting the front and rear thimble-type rubber membranes, the front and rear armor plates respectively forming the front and rear surfaces of the AFIFD; and

at least one driving means mounted between the upper armor plate and a corresponding part of the amphibious vehicle, the driving means carrying out folding and unfolding actions of the AFIFD,

wherein one or more ropes connected to the lower end of the outer armor plate and at least one means for controlling the ropes are additionally mounted at the corresponding connected portion of the amphibious vehicle,

wherein, when the amphibious vehicle swims in water, the upper armor plate, the outer armor plate and the lower armor plate are completely unfolded by the driving means and pneumatic pressure, so that a sealed floating space is formed inside the AFIFD by the inner plate, the upper armor plate, the outer armor plate, the lower armor plate, and the front and rear thimble-type rubber membranes,

wherein, when the amphibious vehicle does not swim in water, the upper armor plate, the outer armor plate and the lower armor plate are folded to the inner plate by the driving means and air suction and fixed by fixing means, and then the front and rear armor plates are closely folded and fixed to the folded upper armor plate, and

wherein the AFIFD is lifted up by the driving means after the fixing means fixing the inner plate of the AFIFD to the outer side of the amphibious vehicle are unfastened.

4.(amended) An AFIFD mounted on an amphibious vehicle for providing additional buoyancy to the amphibious vehicle, the AFIFD comprising:

an inner plate attached to the outer side of the amphibious vehicle through at least one hinge and fixing means, the inner plate forming a first side surface of the AFIFD;

an upper armor plate connected to the upper end of the inner plate by hinges to

form the top surface of the AFIFD;

an outer armor plate connected to the upper armor plate by hinges to form a second side surface of the AFIFD;

a lower armor plate connected to the lower end of the inner plate and the outer armor plate by hinges to form the bottom surface of the AFIFD;

a rubber membrane bag having a sealed space which has a shape and a size suitable for the inner shape of the unfolded armor plates and at least one connector for providing air to the sealed space, the rubber membrane bag being partially bonded to main points of the armor plates to allow the folding and unfolding actions of the AFIFD;

front and rear armor plates respectively connected to both ends of the inner plate by hinges for protecting the front and rear parts of the rubber membrane bag, the front and rear armor plates respectively forming the front and rear surfaces of the AFIFD; and

at least one driving means mounted on the upper armor plate, the driving means carrying out folding and unfolding actions of the AFIFD,

wherein one or more ropes connected to the lower end of the outer armor plate and at least one means for controlling the ropes are additionally mounted at the corresponding connected portion of the amphibious vehicle,

wherein, when the amphibious vehicle swims in water, the upper armor plate, the outer armor plate and the lower armor plate are completely unfolded by the driving means and pneumatic pressure, so that a sealed floating space is formed inside the AFIFD by the rubber membrane bag,

wherein, when the amphibious vehicle does not swim in water, the upper armor plate, the outer armor plate and the lower armor plate, together with the deflated rubber membrane bag, are folded to the inner plate by the driving means and air suction and fixed by fixing means, and then the front and rear armor plates are closely folded and fixed to the folded upper armor plate, and

wherein the AFIFD is lifted up by the driving means after the fixing means fixing the inner plate of the AFIFD to the outer side of the amphibious vehicle are unfastened.

5.(amended) The AFIFD according to claim 4, wherein the lower armor plate is made of multiple strips longitudinally elongated and hinged with each other in a

bendable manner.

6.(amended) An AFIFD mounted on an amphibious vehicle for providing additional buoyancy to the amphibious vehicle, the AFIFD comprising:

an inner plate attached to the outer side of the amphibious vehicle through at least one hinge and fixing means, the inner plate forming a first side surface of the AFIFD;

an upper armor plate connected to the upper end of the inner plate by hinges to form the top surface of the AFIFD;

an outer armor plate connected to the upper armor plate by hinges to form a second side surface of the AFIFD;

a fabric membrane connected to the lower end of the inner plate and the lower end of the outer armor plate to form a lower side of the AFIFD;

a rubber membrane bag having a sealed space which has a shape and a size suitable for the inner shape of the unfolded armor plates and at least one connector for providing air to the sealed space, the rubber membrane bag being partially bonded to main points of the armor plates to allow the folding and unfolding actions of the AFIFD;

front and rear armor plates respectively connected to both ends of the inner plate by hinges for protecting the front and rear parts of the rubber membrane bag, the front and rear armor plates respectively forming the front and rear surfaces of the AFIFD; and

at least one driving means mounted on the upper armor plate, the driving means carrying out folding and unfolding actions of the AFIFD,

wherein one or more ropes connected to the lower end of the outer armor plate and at least one means for controlling the ropes are additionally mounted at the corresponding connected portion of the amphibious vehicle,

wherein, when the amphibious vehicle swims in water, the upper armor plate, the outer armor plate and the fabric membrane are completely unfolded by the driving means and pneumatic pressure, so that a sealed floating space is formed inside the AFIFD by the rubber membrane bag,

wherein, when the amphibious vehicle does not swim in water, the upper armor plate, the outer armor plate, and the fabric membrane, together with the deflated rubber membrane bag, are folded to the inner plate by the driving means and air suction and

fixed by fixing means, and then the front and rear armor plates are closely folded and fixed to the folded upper armor plate, and

wherein the AFIFD is lifted up by the driving means after the fixing means fixing the inner plate of the AFIFD to the outer side of the amphibious vehicle are unfastened.

7.(amended) An AFIFD mounted on an amphibious vehicle for providing additional buoyancy to the amphibious vehicle, the AFIFD comprising:

an inner plate attached to the outer side of the amphibious vehicle through at least one hinge and fixing means, the inner plate forming a first side surface of the AFIFD;

an upper armor plate connected to the upper end of the inner plate by hinges to form the top surface of the AFIFD;

at least one driving means mounted on the upper armor plate, the driving means carrying out folding and unfolding actions of the AFIFD;

an outer armor plate connected to the upper armor plate by hinges to form a second side surface of the AFIFD, wherein a portion of the outer armor plate is in the state of being cut, the cut portion being corresponding to a portion of the upper armor plate to which the driving means is attached in case that the outer armor plate is folded to the upper armor plate;

a fabric membrane connected to the lower end of the inner plate and the lower end of the outer armor plate to form a lower portion of the AFIFD;

a rubber membrane bag having a sealed space which has a shape and a size suitable for the inner shape of the unfolded armor plates and at least one connector for providing air to the sealed space, the rubber membrane bag being partially bonded to main points of the armor plates to allow the folding and unfolding actions of the AFIFD; and

front and rear armor plates respectively connected to both ends of the inner plate by hinges for protecting the front and rear thimble-type rubber membranes, the front and rear armor plates respectively forming the front and rear surfaces of the AFIFD,

wherein one or more ropes connected to the lower end of the outer armor plate and at least one means for controlling the ropes are additionally mounted at the corresponding connected portion of the amphibious vehicle,

wherein the AFIFD further comprises means for securing a space of the driving means by moving a part of the rubber membrane bag as the outer armor plate is folded to the inner plate, in order to secure the space of the driving means and to prevent interference between the driving means and the rubber membrane bag when the outer armor plate is folded,

wherein, when the amphibious vehicle swims in water, the upper armor plate, the outer armor plate and the fabric membrane are completely unfolded by the driving means and pneumatic pressure, so that a sealed floating space is formed inside the AFIFD by the rubber membrane bag,

wherein, when the amphibious vehicle does not swim in water, the upper armor plate, the outer armor plate and the fabric membrane, together with the deflated rubber membrane bag, are folded to the inner plate by the driving means and air suction and fixed by fixing means, and then the front and rear armor plates are closely folded and fixed to the folded upper armor plate, and

wherein the AFIFD is lifted up by the driving means after the fixing means fixing the inner plate of the AFIFD to the outer side of the amphibious vehicle are unfastened.

8.(amended) The AFIFD according to claim 6 or 7, wherein a fabric hardening portion is partially formed on the fabric membrane, the fabric hardening portion having a property of not being bent or broken in free condition in order to prevent the fabric membrane and the rubber membrane bag from being inserted into gaps of the AFIFD.

9.(amended) The AFIFD according to claim 7, wherein the means for securing a space of the driving means includes:

ropes for connecting right and left sides of the cut portion of the outer armor plate to the inner plate, respectively, each rope having a ring formed on the end connected with the outer armor plate; and

rope connecting members located at right and left sides of the cut portion of the outer armor plate, the rope connecting members allowing the rings to slide in direction that the rings becomes closer to the cut portion along the surface of the outer armor plate,

wherein the rings slide to the cut portion of the outer armor plate as the outer

armor plate is folded, so that a portion of the rubber membrane bag around the cut portion is pulled toward the cut portion so as to secure the space for the driving means.

10.(amended) An AFIFD mounted on an amphibious vehicle for providing additional buoyancy to the amphibious vehicle, the AFIFD comprising:

an inner plate attached to the outer side of the amphibious vehicle through at least one hinge and fixing means, the inner plate forming a first side surface of the AFIFD;

an upper armor plate connected to the upper end of the inner plate by hinges, the upper armor plate serving both as the top surface and the outer surface of the AFIFD by being slantedly unfolded;

a seal membrane for sealing between the inner plate and the upper armor plate being in contact with each other;

rubber membrane integrally forming the front, rear and lower surfaces of the AFIFD, in which portions contacting the inner plate and the upper armor plate are bonded with each plate respectively;

at least one connector mounted on the inner plate to provide air to the AFIFD;

front and rear armor plates respectively connected to both ends of the inner plate by hinges for protecting the front and rear surfaces of the rubber membrane, the front and rear armor plates respectively forming the front and rear surfaces of the AFIFD; and

at least one driving means mounted on the upper armor plate, the driving means carrying out folding and unfolding actions of the AFIFD,

wherein, when the amphibious vehicle swims in water, the upper armor plate is slantedly unfolded in a downward direction by the driving means and pneumatic pressure, so that the inner plate and the rubber membrane form a sealed floating space inside the AFIFD,

wherein, when the amphibious vehicle does not swim in water, the integrally formed rubber membrane is folded between the inner plate and the upper armor plate by the driving means and air suction and fixed by fixing means, and then the front and rear armor plates are closely folded and fixed to the folded upper armor plate, and

wherein the AFIFD is lifted up by the driving means after the fixing means fixing the inner plate of the AFIFD to the outer side of the amphibious vehicle are

unfastened.

11.(amended) An AFIFD mounted on an amphibious vehicle for providing additional buoyancy to the amphibious vehicle, the AFIFD comprising:

an inner plate attached to the outer side of the amphibious vehicle through at least one hinge and fixing means, the inner plate forming a first side surface of the AFIFD;

an upper armor plate connected to the upper end of the inner plate by hinges, the upper armor plate serving both as the top surface and the outer surface of the AFIFD by being slantedly unfolded;

a rubber membrane bag having a sealed space which has a shape and a size suitable for the inner shape of the unfolded armor plates and at least one connector for providing air to the sealed space, the rubber membrane bag being partially bonded to main points of the armor plates to allow the folding and unfolding actions of the AFIFD;

front and rear armor plates respectively connected to both ends of the inner plate by hinges for protecting the front and rear parts of the rubber membrane bag, the front and rear armor plates respectively forming the front and rear surfaces of the AFIFD; and

at least one driving means mounted on the upper armor plate, the driving means carrying out folding and unfolding actions of the AFIFD,

wherein, when the amphibious vehicle swims in water, the upper armor plate is slantedly unfolded in a downward direction by the driving means and pneumatic pressure, so that a sealed floating space is formed inside the AFIFD by the rubber membrane bag,

wherein, when the amphibious vehicle does not swim in water, the deflated rubber membrane bag is folded between the inner plate and the upper armor plate by the driving means and air suction and fixed by fixing means, and then the front and rear armor plates are closely folded and fixed to the folded upper armor plate, and

wherein the AFIFD is lifted up by the driving means after the fixing means fixing the inner plate of the AFIFD to the outer side of the amphibious vehicle are unfastened.

12.(amended) An AFIFD mounted on the front surface of an amphibious vehicle for providing additional buoyancy to the amphibious vehicle, the AFIFD

comprising:

a front armor plate having a lower end edge hinged to a nose portion of the front surface;

an upper armor plate hinged to an edge protruding in the form of an "L" shape on the upper end of the front armor plate;

inverted triangle-type left and right armor plates respectively hinged with protrusions on the left and right sides of the front armor plate, the protrusions being more protruding than the protruding edge of the upper end of the front armor plate;

a rubber membrane bag located within the space between the front armor plate and the upper armor plate and having a sealed space which has a shape and a size suitable for the inner shape of the unfolded armor plates and at least one connector for providing air to the sealed space, the rubber membrane bag being partially bonded to main points of the armor plates to allow the folding and unfolding actions of the AFIFD;

a driving means for operating the front armor plate;

an upper armor plate driving means mounted inside the rubber membrane bag, both ends of the driving means attached to the central and lower end of the front armor plate and the central and upper end of the upper armor plate respectively; and

at least one side plate driving means mounted on each side to operate the left and right armor plates.

13. (amended) The AFIFD according to any one of claims 3 to 7, wherein the connector is an extensible connector, and both ends of the driving means are respectively mounted on the corresponding connected portion of the amphibious vehicle and the upper armor plate through the extensible connector.

14. ~ 29. (cancelled)